



Trip to Indonesia in February / March 2009

**Pekanbaru, Riau Province (Sumatra) and Spermonde Archipelago
(South Sulawesi)
20 February to 11 March 2009**

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The trip to Indonesia in early 2009 led the LOICZ/SPICE team Marion Glaser and Bernhard Glaeser to two destinations: first to Pekanbaru in Riau Province (north Sumatra), February 20-24, then to Makassar and the nearby Spermonde Archipelago in southwest Sulawesi, February 27 to March 11. Both visits consisted of a workshop with summer school for Indonesian (in Pekanbaru for German and Indonesian) students and a field trip. Whereas the field trip to some coral reef islands in the Spermonde Archipelago marked the beginning of an Indonesian-German research activity which is largely funded by the German Ministry for Education and Research (BMBF) and the Indonesian Ministry for Research and Technology (RISTEK) the much shorter workshop and field trip in Riau assembled a team of Indonesian and German researchers and students without funding, designed to develop a research plan and proposal in the near or more distant future.

SPICE (Science for the Protection of Indonesian Coastal Ecosystems) is a LOICZ project. SPICE Cluster 6 "Governance und Management of Indonesian Coastal Social-Ecological Systems" is coordinated by Marion Glaser and Agus Heri Purnomo. It is related to LOICZ Priority Topic 1, Social-Ecological Systems (SES) Analysis and a pioneer project in empirical SES analysis.

1. Riau / Sumatra

Riau Province on Sumatra is one of three SPICE project sites, the other two being Spermonde Archipelago in southwest Sulawesi (see below) and Segara Anakan in southwest Java.

The arrival in Pekanbaru, the province capital, was overshadowed by smog which darkened not only the city but large parts of northern Sumatra, the Malacca Strait, Singapore and south Malaysia. The smog was caused by illegal forest burning and clearance and lasted for several days. The objective was to have space for new palm-oil plantations.



Indonesia is one of the world's largest palm-oil exporters. Plantation pesticides and other chemicals pollute the Siak river, one of the largest Indonesian rivers. The population in the villages along the river uses its water for different purposes, such as fishing, washing, cooking, and even drinking. Negative health effects are likely to happen.

Observations in Riau along the Siak river have shown that, between 2006 and 2008, most pulp and paper plants had been shut down because there were no more trees to be felled. Deforestation was complete. Regional development cannot be maintained, sustainable forest production is lacking. Reafforestation on the cleared territories was limited. Instead, pulp and paper was replaced with monocultural palm oil plantations and industries whose effluents pollute the river.

Indonesia as a whole has seen rapid deforestation caused by large scale conversion projects, mainly for palm oil plantations. Deforestation reached 1.8 million hectares per year between 1987 and 1997. It rose sharply to 2.8 million hectares annually from 1998 to 2000 and then declined again to 1.8 million hectares between 2000 and 2006 (The Jakarta Post, February 25, 2009: 5).

The German-Indonesian SPICE meeting in Pekanbaru consisted of two parts. Part 1 was a two day field trip to the Siak river estuary and to the Districts of Bengkalis and Siak, on February 21-22, 2009, funded by LOICZ. Part 2 was a two day International Workshop and Summer School on February 23-24, 2009, which was prepared and funded by UNRI (Riau University in Pekanbaru).

Participants were Indonesian and German researchers as well as public health students from both countries.

The aim of the field trip was to have an impression of the pollution in the river, caused by riverine industrial plants, including palm oil industry and pulp and paper, and to interview villagers in the adjacent and nearby villages about possible health effects and waterborne diseases. As an example: About 400 families live in the town of Siak Sri Indrapura. Twenty percent of the population use the river water for daily hygiene like washing themselves, laundering clothes and brushing teeth, but they hardly drink the river water. In 1985/86, fish started to die, presumably caused by factory effluents. The number of fishermen has not increased since then. Pollution comes and goes. The villagers smell the chemical substances when they arrive, usually two to three times a year. This year, chemicals appeared already last week (in February 2009). The respondent reported that the fish was unconscious. They do not eat dead fish but they eat them when they are still alive but seem to be dazed. The occurrence of pollution is usually reported to the local fishery department, but until



now no measure has been taken. Skin diseases are the most prominent problems.

Presentations at the following workshop presented scientific findings and confirmed the complaints encountered in the villages. According to Dr Christine Jose, food scientist at the Chemistry Department of Riau University,

- Siak river is a source of potable water, but contaminated by E. coli
- Siak river is a sink of urban drainage and industrial effluent
- People are exposed to water borne diseases
- As Siak water is used for daily life, food, glassware and utensil may be contaminated by E. coli
- Heavy metals are also present in the water and contaminate fish
- The bioactive component in the heavy metal contaminated fish may enter the human body as people consume the fish
- The bioactive component may pass through the cell nucleus and negatively affect the DNA and RNA

Outcome: The workshop participants agreed to develop a framework for a research proposal („skeleton“). All collaborators were requested to fill in and to add „flesh to the bones“. Indonesian and German public health theses form the research nucleus. The first ones are expected to be ready in early 2010.

A joint publication is planned as a book chapter: "River health and community health" (working title). Within the conceptual framework of social-ecological systems (SES) and governance analysis, the focus is on poverty, health and sustainable development within the Siak river catchment area in Riau Province.

2. Spermonde / Sulawesi

The preparation of the Spermonde research, including questionnaire development, was done in Bremen (ZMT) and Makassar (UNHAS University) during the winter time of 2008/2009. A final preparatory workshop was conducted in Makassar on February 27-28 before a nine day field trip (March 1-9) was started to visit four coral reef islands in Spermonde. A local style white ship named Cinta Laut (Love of the Sea) embarked about 30 participants: Indonesian research students, Indonesian and German supervisors and researchers, a film team, a Jakarta Post reporter, and crew members, including two cooks.

The four islands visited appeared to be, much to the surprise of some of the Indonesian students, totally different from one another, economically,



socially, or politically. Let me attach nicknames to highlight their peculiarities as the research team identified them, no doubt with a subjective bias. We visited “Haji Island”, “Conflict Island”, “Women’s Island” and “Pirate Island”. The Spermonde population speaks three different Malay languages: Bahasa Indonesia (the official Indonesian national language), Makassarese and Buginese—a fact that renders research somewhat difficult, even for Indonesians.

The routine was the same for all four islands, namely two days’ visits, including two overnight stays: Arrival midday, followed by an official welcome, lunch, and discussion with the villagers at the village office or in a school. After that, the research team split up into sub-teams to assemble focus groups, consisting of two male and two female groups representing more or less influence and wealth. In the evening, a film was shown publicly at a central village place. The second day was reserved for further focus group discussions or individual interviews. On the third day, the ship moved on to the next island.

“**Haji Island**” (**Barrang Caddi**) is dominated by an innovative fish entrepreneur and trader (*punggawa*). At the same time, he is a *haji* (pilgrim to Mecca) and thus an eminent leader due to religious credentials. The social capital of a prominent figure (*tokoh*) is gained in one or more of the following fields: religion (*agama*), economy (*ekonomi*), social network (*sosial*), knowledge, including innovation (*pengetahuan*). Our leader dominates in all of them.

“**Conflict Island**” (**Badi**) is divided. The population is segregated into two factions that don’t get along well since long ago. Fishermen for one boat don’t mix, women do not visit the houses on the other (eastern) side. Excursion participants suffered low-grade aggression (verbal, pushing, grabbing) from people from the poorer (western) part of the village. The excluded part in the west has erosion problems—quite a few houses had been washed away by the waves—and less development money or projects. Wooden wave breakers had been installed but were not very effective.



*Women work in a crab processing factory.
(Photo: Bernhard Glaeser)*

“Women’s Island” (Saugi) is characterized by women’s labor. Women work in a crab processing factory, they are seasonally employed in seaweed (*rumpu laut*) culture, and they are self-employed as small village traders. This island looks traditional, tidy and well-kept: Flowers and fruit trees (bananas) have been planted, roads are clean, gardens have fences, goats are on leashes. Different from other islands, village assemblies don’t show a strict right-left segregation between men and women as is the custom in a mosque. Women on Saugi island earn money on a regular basis. This is an extra family and village income in addition to what the fishermen earn. The fact that women earn money renders them more influential and may cause social change.



“Pirate Island” (Karanrang) builds on “pirate fishing”, using bombs and cyanide for fishing whereby the fishermen destroy the reef, the fundamental biotope to support a highly diverse biocoenosis, including fish. This island is the wealthiest and the most “modern”. The welcoming lunch was chicken (not fish) and was served in styrofoam boxes.

“Pirate fishers” take off to bomb the reef
(Photo: Bernhard Glaeser)

One could see TV sets and mobile phones. The population included 40 *hajis*, which means that 40 trips to Mecca had to be financed in one year. A huge mosque had been constructed recently.



“Pirate Island” (Karanrang)
Villagers discuss past developments and future options with researchers.
(Photo: Marion Glaser)

The overall picture was slightly depressing. Fish resources have been depleted. A sixty-five year old Saugi fisherman phrased it like this: “Crabs are much smaller now. Formerly, four to five crabs weighed one kg, now it takes 12 crabs to reach that weight. Whereas the small ones used to be thrown back, now everything is taken. In former times, we went fishing only when the weather was good. Now, they go every day, even when it storms. When a storm came, previously, we would throw the anchor and stay. Nowadays, the boat would sink. This proves that the waves are higher now.”



Sea level rise and storms threaten small islands
(Photo: Bernhard Glaeser)

Many local inhabitants acknowledge that present fishing practices, if unchanged, will result in the degradation, if not destruction, of the reef. Sea level rise is threatening the islands. Houses have been destroyed, already. People moved to relatives or left their island. There are few sources for income. A vision or concept for future development seems to be non-existent. The respondents simply hope for more fish in the future. The conviction of a God-given destiny is ever present.

A positive exception were the women on Saugi Island who found employment or were self-employed. They went to work when the men came home from fishing. Employment opportunities for women and aquaculture (sea cucumbers, fish cages, algae cultivation) seem to be a way out of the stagnant economic situation and should be pursued by on the provincial and district level to promote local and regional development. Reef restoration is an option to reduce beach erosion. Social-ecological systems analysis aims at understanding how to increase reef resilience and to enhance people's livelihoods.



Indonesia's Fisheries Minister Freddy Numberi advocates a policy shift to focus the country's development on the oceans: "An ocean policy, made with the cooperation of all stakeholders ..., will set us on the right course to realize the full potential of our marine resources" (The Jakarta Post, February 26, 2009: 4).

Outcome: The research will be continued in May, 2009. A final report will be prepared which includes the islanders' reconstruction of their long term historical time lines and their future visioning, social networks, and spatial and seasonal mapping in order to understand which people, resources and locations are of special importance to the community and what constitutes the specific social-ecological focus system(s).



Bernhard Glaeser and Marion Glaser (LOICZ SSC members and authors of the article) discuss questionnaires.

Photo: unknown research student (Bernhard Glaeser's camera)
